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ABSTRACT

Forecasts of fall headcount enrollment for 1980-90 for higher education institutions in Texas are presented. These revised forecasts are based on a combination of projected population for the state and historical college attendance patterns. Two additional years of official county population estimates and actual college enrollments were used, and more precise procedures for determining the expected net migration change and age distribution of the population in each county were incorporated. In addition, participation rates from individual counties were determined for each of the four age groups, replacing the average statewide rate previously used to forecast public senior college enrollment. Annual enrollment forecasts are presented for the five groups of institutions: public and independent junior/community colleges, public and independent senior colleges, and the Texas State Technical Institute. These forecasts are the aggregate enrollment for all institutions in each group; enrollment forecasts for individual institutions were prepared only for the 37 public senior colleges and universities. Participation rates by age groups in public senior colleges for the state as a whole and for five large counties are presented. Information is also presented on junior/community college enrollment by selected age groups for 1975-79 and on projected fall headcount enrollments for 1980-90 by selected age groups. After public senior college enrollment had been forecast, a regression equation was established to predict the total independent senior college enrollment. (SW)

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Fall Headcount Enrollment Forecasts

1980–1990

Texas Postsecondary Educational Institutions

U S DEPARTMENT OF HEALTH
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CB Study Paper 27

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Foreword

In March 1978, the Coordinating Board adopted fall headcount enrollment forecasts for the period 1978-1987 for each of the 37 public senior colleges and universities. The staff subsequently developed overall headcount enrollment forecasts for the broad categories of institutions: public and private senior institutions, public and private junior colleges and the state technical institute. The projections were published as Study Paper 27. Compared with actual enrollments for 1978 and 1979, those forecasts were slightly high.

In order to respond to the changing patterns of college enrollment and population distribution, the staff reexamined the 1978 projections in the light of more recent information. The 10-year fall headcount enrollment forecasts presented in this revision of Study Paper 27 are the result of that reevaluation. They were adopted by the Board on July 18, 1980.

The revised forecasts are based on a combination of projected population for the state and historical college attendance patterns. Basically, this is the same procedure which was used for the Study Paper 27 forecasts; however, some important improvements have been incorporated. First, two additional years of official county population estimates and actual college enrollments were available; second, more precise procedures for determining the expected net migration change and age distribution of the population in each county were incorporated; and third, participation rates from individual counties were determined for each of the four age groups, replacing the "average statewide" rate previously used to forecast public senior college enrollment.

Southwest Econometrics of Austin, a private consulting firm which assisted the staff in preparing the previous forecasts, again was employed for this study. As in the past, institutional representatives were

encouraged to participate in the process. The Coordinating Board and its staff appreciate the contributions of all who took part in the development of these enrollment forecasts.

Kenneth H. Ashworth
Commissioner of Higher Education

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ENROLLMENT IN TEXAS COLLEGES AND UNIVERSITIES DURING THE NEXT 10 YEARS

During the 10-year period from 1980 to 1990, total enrollment in Texas postsecondary educational institutions is expected to increase by 46,802 students. During the first half of the decade, enrollment will remain relatively stable--increasing only about 1.7 percent. This slow growth in headcount enrollment reflects the decreases in the number of 15- to 19-year-olds and 20- to 24-year olds in the state's population mix. Over the latter five-year period, growth will accelerate slightly--averaging an increase of roughly one percent annually. This modest increase in expected college enrollment is primarily attributable to an upturn in the number of 15- to 19-year-olds, reflecting the entrance of offspring of the postwar "baby boom" generation.

Annual enrollment forecasts are presented in Table 1 for the five broad groups of institutions: public and independent junior/community colleges, public and independent senior colleges and the Texas State Technical Institute. These forecasts are the aggregate enrollment for all institutions in each group. Enrollment forecasts for individual institutions were prepared only for the public senior colleges and universities (Table 2).

The public junior/community colleges and the state technical institute both will continue to grow in enrollment throughout the 10-year period. The growth rates of about one percent annually for the junior/community colleges and about three percent annually for the technical institute, however, are considerably below the rate experienced during the 1970s. All enrollments for these institutions in Table 1 represent fall headcount for semester-length courses. The earlier forecasts for junior/community colleges and the Texas State Technical Institute represented enrollment of all types. Therefore, the forecasts in Table 1 for these institutions cannot be compared

with those in the 1978 Study Paper 27.

Enrollments for the independent senior colleges and universities (Table 1) show a modest gain of 2.2 percent during the 10-year period. Enrollment for these institutions is expected to be relatively stable from 1980-1985. Some slight gains are expected during the second half of the decade. The private junior colleges are the only group which is expected to lose enrollment. This is a continuation of the overall trend which prevailed during the previous decade.

Enrollment forecasts for the 37 public senior colleges and universities are shown in Table 2. Nine of these institutions are predicted to experience some enrollment loss below the fall 1979 level. Total enrollment for public senior colleges and universities each year was obtained by adding predicted enrollment for the 37 individual institutions. As in the case of total postsecondary enrollment, public senior college and university enrollment will benefit somewhat from the increased number of 15- to 19-year-olds during the last five years of the decade.

When interpreting the forecasts presented in Table 2, it should be kept in mind that the forecast model relies on historical patterns of attendance at each institution and projected population changes by county. Hence, to the extent that an institution is successful in modifying its drawing patterns, that alternative population concentrations develop or that college participation rates change, these forecasts may not reflect accurately actual future enrollments. Given current trends and relationships, however, the forecasts presented in Table 2 portray the most likely outcome.

TABLE 1

Fall Headcount Enrollment Forecasts
Texas Postsecondary Institutions
1980-1990

	JUNIOR COLLEGES *		SENIOR COLLEGES		TSTI	
YEAR	Independent	Public	Independent	Public		TOTAL
** 1978	2,270	235,815	71,901	328,617	5,416	644,019
** 1979	2,289	239,136	73,493	330,869	5,928	651,715
1980	2,266	242,995	74,117	335,394	6,293	661,065
1981	2,243	243,428	74,309	337,853	6,544	664,377
1982	2,221	243,865	74,436	339,479	6,716	666,717
1983	2,199	244,298	74,552	340,967	6,954	668,970
1984	2,177	244,735	74,641	342,112	7,130	670,795
1985	2,155	245,162	74,695	342,805	7,301	672,118
1986	2,133	249,201	74,865	344,988	7,409	678,596
1987	2,112	253,228	75,044	347,281	7,553	685,218
1988	2,091	257,260	75,272	350,196	7,820	692,639
1989	2,070	261,288	75,510	353,252	8,087	700,207
1990	2,049	265,319	75,753	356,363	8,383	707,867
% Change 1980-90	-9.58	+9.19	+2.21	+6.25	+33.21	+7.08
Enrollment Change 1980-90	-217	+22,324	+1,636	+20,969	+2,090	+46,802

* Semester-length projections only
** Actual enrollments

TABLE 2

Population-Based Fall Headcount Enrollment Forecasts
in Texas Public Senior Institutions, 1980-1990

Year	Angelo State	East Texas State	East Texas Texarkana	Lamar	Lamar Orange	Lamar Port Arthur	Mid-Western	North Texas State	Pan American
1978 *	5468	9280	1053	10946	92?	904	4459	17300	7920
1979 *	5637	8749	1068	10860	823	957	4207	17228	8533
1980	5749	8711	1068	10874	831	962	4123	17527	8712
1981	5835	8727	1071	10749	833	966	4099	17603	8761
1982	5908	8744	1072	10564	835	968	3961	17677	8810
1983	5967	8822	1079	10409	837	970	3822	17752	8860
1984	6011	8869	1086	10255	839	972	3684	17827	8910
1985	6041	8896	1094	10098	841	976	3546	17902	8959
1986	6060	8918	1077	10096	850	979	3532	18135	9079
1987	6102	8941	1060	10095	859	981	3517	18367	9201
1988	6148	8961	1042	10092	868	982	3502	18600	9321
1989	6194	8983	1025	10089	877	992	3488	18832	9441
1990	6256	9005	1008	10087	886	1002	3473	19064	9563
Enrollment Change									
1979-80	112	-38	0	14	8	5	-84	299	179
1980-85	292	185	26	-776	10	14	-577	375	247
1980-90	507	294	-60	-787	55	40	-650	1,537	851

* Actual enrollments

TABLE 2 (Cont.)

Year	Pan American Browns-ville	Sam Houston State	South-West Texas State	Stephen F. Austin	Sul Ross	Sul Ross Uvalde	Corpus Christi State	Texas A&I	Laredo State
1978 *	1141	10903	15072	10268	1761	584	2654	6225	829
1979 *	1161	10547	15924	10112	1654	486	2677	6060	770
1980	1185	10652	16230	10159	1664	495	2696	6047	789
1981	1192	10758	16277	10170	1635	499	2709	5993	788
1982	1200	10866	16324	10175	1606	502	2707	5891	787
1983	1208	10974	16375	10180	1577	505	2706	5792	786
1984	1216	11085	16416	10186	1549	509	2705	5694	785
1985	1224	11195	16476	10198	1520	512	2709	5593	784
1986	1229	11307	16584	10203	1512	516	2710	5561	785
1987	1234	11420	16844	10225	1505	519	2724	5519	786
1988	1239	11535	17104	10247	1496	523	2725	5497	786
1989	1243	11650	17364	10310	1487	527	2736	5463	787
1990	1248	11766	17624	10373	1480	531	2750	5430	787
Enrollment Change									
1979-80	24	105	306	47	10	9	19	-13	19
1980-85	39	543	246	39	-144	17	13	-454	-5
1980-90	63	1114	1394	214	-184	36	54	-617	-2

* Actual enrollments

TABLE 2 (Cont.)

Year	Prairie View A&M	Tarleton State	Texas A&M **	Moody	Texas Southern	Texas Tech **	Texas Woman's	UT Arlington	UT Austin
1978 *	4991	3323	30191	621	8797	22696	8269	18261	43095
1979 *	5226	3403	31249	640	8532	23118	7757	19138	44102
1980	5298	3428	31962	649	8523	23417	7563	19903	45106
1981	5314	3430	32454	652	8547	23437	7465	20500	45806
1982	5322	3435	32986	654	8563	23477	7473	21116	45907
1983	5349	3435	33243	657	8579	23522	7480	21644	46115
1984	5365	3440	33470	660	8594	23578	7464	22076	46123
1985	5382	3440	33529	663	8610	23635	7470	22168	46231
1986	5439	3445	33912	669	8626	23670	7507	22440	46339
1987	5497	3463	34291	675	8641	23705	7545	22662	46456
1988	5553	3480	34673	681	8657	23740	7583	22735	47176
1989	5610	3497	35052	687	8673	23775	7621	22807	47893
1990	5668	3538	35433	693	8688	23815	7659	22880	48611
Enrollment Change									
1979-80	72	25	713	9	-9	299	-194	765	1004
1980-85	84	12	1567	14	87	218	-93	2265	1125
1980-90	370	110	3471	44	165	398	96	2977	3505

* Actual enrollments
** Does not include medical students

TABLE 2 (Cont.)

Year	UT Dallas	UT El Paso	UT Permian Basin	UT San Antonio	UT Tyler	Houston	Houston Downtown	Houston Victoria	Houston Clear Lake	West Texas State	Total
1978 *	5378	15748	1602	8885	1938	29666	4677	672	5519	6600	328,617
1979 *	5882	15745	1598	9453	1972	28414	4610	743	5365	6469	330,869
1980	5951	15945	1610	9760	1980	28500	4689	739	5441	6450	335,394
1981	6013	16038	1615	9885	2002	28574	4759	739	5520	6438	337,853
1982	6076	16058	1618	9965	2024	28649	4829	738	5599	6393	339,479
1983	6139	16079	1620	10055	2047	28724	4899	737	5677	6346	340,967
1984	6201	16099	1625	10191	2068	28799	4969	737	5755	6300	342,112
1985	6264	16118	1630	10278	2091	28869	5039	736	5834	6254	342,805
1986	6326	16138	1636	10467	2071	29234	5104	723	5889	6220	344,988
1987	6387	16157	1642	10608	2050	29598	5169	710	5944	6182	347,281
1988	6449	16333	1645	10751	2030	29963	5234	698	5999	6148	350,196
1989	6511	16610	1648	10896	2010	30327	5299	684	6054	6110	353,252
1990	6573	16886	1650	11043	1990	30692	5354	672	6109	6076	356,363
Enrollment change											
1979-80	69	200	12	307	8	86	79	-4	76	-13	4525
1980-85	313	173	20	518	111	369	350	-3	393	-202	7411
1980-90	622	941	40	1283	10	2192	665	-67	668	-380	20969

* Actual enrollments

METHODOLOGY FOR FALL HEADCOUNT ENROLLMENT FORECASTS (1980-1990) FOR TEXAS POSTSECONDARY EDUCATION

Public Senior Institutions

Trial forecasts of the 37 public senior institutions in Texas were performed using a modified version of the disaggregated population-based model which was described in the original Study Paper 27.

First, county population projections by five-year age intervals over the period 1980-1990 for each of the 254 counties were generated. Second, county public senior college participation rates were determined for age groups 15-19, 20-24, 25-29 and 30 and above. Third, the county public senior college participation rates and the county population projections were combined to obtain the total projected number of students attending senior-level public institutions from each county for the period 1980-1990. These totals were then allocated to the 37 institutions by multiplying the county totals by the average percentage of students who attended one of the 37 institutions over the years 1976-1979.

The procedure outlined above was used to forecast enrollments for 1979. The 1979 forecasts were adjusted to predict the actual observed 1979 enrollments by multiplying the predicted enrollments by the ratios of 1979 actual to predicted enrollments. The individual forecasts for the years 1980-1990 were also multiplied by this ratio to account for out-of-state students and to eliminate over- or-under-counting due to the averaging process.

The two critical determinants in the forecast methodology are the county population projections and the county college participation rates, each of which will be discussed in turn.

The state population projections obtained by adding up the individual county projections are presented in Table 3. The projections indicate an

TABLE 3

Texas Population By Selected Age Groups, 1976-1990

Year	Age 15-19	Age 20-24	Age 25-29	Age 30+	Total Population
*1976	1,226,980	1,180,261	1,030,184	5,694,958	12,570,999
*1977	1,218,994	1,206,974	1,076,202	5,801,728	12,800,999
*1978	1,211,023	1,233,730	1,122,238	5,908,524	13,047,006
*1979	1,203,034	1,260,456	1,168,246	6,015,304	13,380,000
1980	1,195,071	1,287,200	1,214,287	6,122,092	13,557,000
1981	1,170,682	1,278,118	1,231,023	6,262,676	13,785,000
1982	1,146,323	1,269,049	1,247,778	6,403,278	14,013,000
1983	1,121,934	1,259,956	1,264,510	6,543,858	14,241,000
1984	1,097,575	1,250,892	1,281,261	6,684,459	14,469,000
1985	1,073,135	1,241,762	1,297,938	6,825,045	14,697,000
1986	1,147,266	1,214,082	1,296,127	6,965,648	14,950,000
1987	1,221,328	1,186,314	1,294,222	7,106,228	15,153,000
1988	1,295,406	1,158,580	1,292,343	7,246,830	15,381,000
1989	1,369,463	1,130,820	1,290,445	7,387,410	15,609,000
1990	1,443,541	1,103,088	1,288,573	7,528,016	15,837,000

*1976-1979 are population estimates based on U.S. Bureau of the Census publications; 1980-1990 are projections

increase in average age of the Texas population over the 1979-1990 period. The table shows a rapid and continuous increase in the 30-and-over age group, while the 25-29 age group increases until 1985, slowly declining in the latter half of the decade. The age groups which encompass the prime college-going ages are the 15-19 and 20-24 groups. The size of the 15-19 age group falls until 1985; after 1985, it increases through 1990. The increase in the latter five-year period will induce enrollment increases in postsecondary educational institutions in the early 1990s, as the 15- to 19-year-olds move into the 20-24 age group. Over the 1979-1990 period the 20-24 age group is expected to increase moderately between 1979 and 1980 and to decline rapidly from 1980 through 1990.

The second critical determinant in the disaggregate population-based forecasting model concerns the county age-specific public senior college participation rates. Data collected by the Coordinating Board over the past four years was used to determine the number of persons in each age group attending a Texas public senior college for each county. This number, divided by the total county population for the corresponding age group, determined the college-going rates.

Table 4 presents a summary of the participation rates for the state as a whole and for five large counties. For the state as a whole, the table contains the age group averages over the four-year period. These averages are similar to the statewide average rates used in previous forecasts. The standard deviations indicate that the distribution of college-going rates for each age group is fairly diverse among counties. That is, 95 percent of the counties are expected to experience a college-going rate between .0106 and .1302 for 15- to 19-year-olds, between .0348 and .1936 for 20- to 24-year-olds, between 0.0 and 0.1174 for 25- to 29-year-olds, and between 0.0 and 0.148 for individuals 30 and over. Also presented are the

TABLE 4

Characteristics of County Public Senior College-Going Rates
Texas and Selected Counties,
1976-1979 Averages

Age Group:	15-19	20-24	25-29	30+
Average:	.0704	.1142	.0340	.0052
Standard Deviation:	.0299	.0397	.0417	.0048
Minimum:	.0167	.0163	.0059	.0006
Maximum:	.1653	.2808	.1310	.0356
Averages For:				
Harris	.0798	.0883	.0269	.0065
Dallas	.0571	.0836	.0300	.0092
Bexar	.0478	.0719	.0332	.0082
Tarrant	.0671	.0886	.0326	.0084
El Paso	.0997	.1416	.0644	.0150

minimum and maximum values of college-going rates observed for each age group--indicating the range of possible rates among the 254 counties.

In order to obtain an indication of how the age-specific college-going rates vary among selected counties, the rates for the state's five largest counties also are shown in Table 4. The rates for the primary college-going age group 20-24 are approximately the same (with the exception of El Paso County, whose rate is nearly twice as large as that of Bexar County).

Upon examination of all the college-going rates, no patterns which would introduce bias were found. Also, an examination of the going rates for each county for the four age groups over 1976-1979 revealed that the rates were stable and exhibited very small variances. Thus, it is now clear that the use of these county going rates in lieu of the statewide rates used in the original Study Paper 27 forecasts will improve the reliability of the forecasts.

In the evaluation of the validity of this methodology for each institution, other factors also were considered: enrollment trends over the past five years, freshmen enrollment as a function of total enrollment, first-time-in-college and transfer enrollments, foreign students as a percentage of total enrollments, historical patterns for major in-state drawing age, off-campus enrollments as a percentage of total enrollments, average age of students and percentage of part-time enrollment.

When the staff had completed its analysis, the chief executive officer of each public senior college and university was given a copy of the enrollment forecast for his or her own institution, the overall statewide totals and backup data on population and enrollment trends. About half of the institutions accepted the staff forecasts without comment; several others agreed in principle but offered observations applicable to their own particular

enrollment situations; and a few contested the staff forecasts as being too low. When an institution presented substantive data to support its claim for a higher enrollment forecast, its position was accommodated and is reflected in these forecasts.

Public Junior/Community Colleges

The methodology for fall headcount enrollment forecasts in public community/junior colleges combined historical junior college going rates by age group with population projections for those age groups over the period being considered (1980-1990).

The results of this procedure are presented in Tables 5 through 7. Table 5 lists, by four age groups (15-19, 20-24, 25-29 and 30+), the junior college enrollments for the years 1976-1979.

Dividing the historical enrollment data for each age group in Table 5 by the population of each age group yields a junior college going rate for each group for each year. These results, as well as average going rates for the four-year period, are presented in Table 6.

The average going rate by age group data in Table 6 was used to forecast junior college enrollments in the following way: As the actual fall headcount enrollments in junior colleges were known for 1979, for comparative purposes the estimated college-going rates for each age group were multiplied by the corresponding population in that age group to produce an estimate of the junior college enrollments in 1979. Because our estimating data excluded out-of-state students, foreign students, students of indeterminate age and some students less than 15 years old, the estimated 1979 fall headcount enrollment in junior colleges was less than the actual 1979 fall headcount enrollment. To account for this discrepancy, the ratio of the actual 1979 fall headcount enrollment to the estimated enrollment was

calculated. This ratio measures the amount by which the 1979 estimate was below the actual fall headcount enrollment in 1979, and it was used to portray students not accounted for by one of the reasons above.

To forecast the fall headcount enrollments for the period 1980-1990, the age-specific junior college going rates were first multiplied by the state population projections for the four age groups to provide a preliminary estimate of junior college fall headcount enrollments. These estimates were then multiplied by the ratio of 1979 actual to predicted junior college fall headcount enrollments to account for underreporting, as discussed in the paragraph above.

The results of this procedure are presented in Table 7 for the years 1980-1990.

TABLE 5

Junior/Community College Enrollment
by Selected Age Groups 1975-1979

Year	Age Group			
	15-19	20-24	25-29	30+
1976	57,172	54,039	37,840	54,887
1977	58,121	58,246	36,947	59,015
1978	60,191	59,532	37,210	63,938
1979	63,654	62,260	37,370	64,507

TABLE 6

Estimated Junior/Community College Going Rates
By Selected Age Groups
1976-1979

Year	Age Group			
	15-19	20-24	24-29	30+
1976	0.047	0.046	0.037	0.010
1977	0.048	0.048	0.034	0.010
1978	0.050	0.048	0.033	0.011
1979	0.053	0.049	0.032	0.011
Average	0.0495	0.0478	0.0340	0.0105

TABLE 7

Predicted Junior/Community College Enrollment
By Selected Age Groups
1980-1990

Year	Enrollment by Age Group				Total
	15-19	20-24	25-29	30+	
1980	63,534	66,081	44,341	69,039	242,995
1981	62,237	65,615	44,952	70,624	243,428
1982	60,942	65,149	45,564	72,210	243,865
1983	59,645	64,683	46,175	73,795	244,298
1984	58,350	64,217	46,787	75,381	244,735
1985	57,051	63,749	47,396	76,966	245,162
1986	60,992	62,328	47,329	78,552	249,201
1987	64,929	60,902	47,260	80,137	253,228
1988	68,868	59,478	47,191	81,723	257,260
1989	72,805	58,053	47,122	83,308	261,288
1990	76,743	56,629	47,054	84,893	265,319

Independent Senior Colleges and Universities

Forecasts of total enrollment for the independent senior colleges and universities were obtained by first determining the historical correlation coefficient between independent and public senior college total enrollments for the 12-year period 1968-1979. Since the coefficient of correlation was .904, it was determined that a very high correlation exists.

Therefore, after public senior college enrollment had been forecast by the methodology previously described, a regression equation was established to predict the total independent senior college enrollment.

Observed data for the years 1968-1979 was used to develop the following equation:

$$Y_i = 69{,}500 + .078\ (X_i - 276{,}200)$$

Where:

Y_i is the predicted value of independent senior college enrollment

X_i is the predicted value of public senior college enrollment

Note: 69,500 is the mean of the observed values of independent enrollment, and 276,200 is the mean of the observed values of public enrollment during the period 1968-1979.